WHAT IS CLAIMED IS:

1. A method of forming a silicon-based thin film comprising effecting high frequency plasma CVD using a source gas comprising a silicon halide and hydrogen, wherein the value of Q defined by $Q = P_o \times P_R / S / d$ is 50 or more, wherein P_o (W) is a supplied power, S (cm^2) is the area of a high frequency introducing electrode, d (cm) is a distance between the high frequency introducing electrode and a substrate, and P_R (mTorr) is a pressure.

2. The method according to claim 1, wherein the silicon halide contains at least one element of fluorine and chlorine.

3. The method according to claim 1, wherein the flow rate of the hydrogen of the source gas is not less than the flow rate of the silicon halide.

4. The method according to claim 1, wherein the pressure P_R is 50 mTorr or more.

5. A silicon-based thin film formed by high frequency plasma CVD using a source gas comprising a silicon halide and hydrogen, wherein the high frequency plasma CVD is effected under such conditions that the value of Q defined by $Q = P_o \times P_R / S / d$ is 50 or more, wherein P_o (W) is a supplied power, S (cm^2) is the area

of a high frequency introducing electrode, d (cm) is a distance between the high frequency introducing electrode and a substrate, and P_R (mTorr) is a pressure.

6. The thin film according to claim 5, wherein the silicon halide contains at least one element of fluorine and chlorine.

7. The thin film according to claim 5, wherein the flow rate of the hydrogen of the source gas is not less than the flow rate of the silicon halide.

8. The thin film according to claim 5, wherein the pressure P_R is 50 mTorr or more.

9. The thin film according to claim 5, wherein Raman scattering intensity resulting from a crystal component is at least three times Raman scattering intensity resulting from an amorphous component.

10. The thin film according to claim 5, wherein the percentage of diffraction intensity for (220) with X-ray or electron beam diffraction is 50% or more of total diffraction intensity.

11. A photovoltaic element comprising a semiconductor layer comprised of at least one pin

junction on a substrate, at least one i-type semiconductor layer being formed by high frequency plasma CVD using a source gas comprising a silicon halide and hydrogen, wherein the element comprises a silicon-based thin film comprising a crystal phase formed under such conditions that the value of Q defined by $Q = P_o \times P_R / S / d$ is 50 or more, wherein P_o (W) is a supplied power, S (cm^2) is the area of a high frequency introducing electrode, d (cm) is a distance between the high frequency introducing electrode and a substrate, and P_R (mTorr) is a pressure.

12. The photovoltaic element according to claim 11, wherein the silicon halide contains at least one element of fluorine and chlorine.

13. The photovoltaic element according to claim 11, wherein the flow rate of the hydrogen of the source gas is not less than the flow rate of the silicon halide.

14. The photovoltaic element according to claim 11, wherein the pressure P_R is 50 mTorr or more.

15. The photovoltaic element according to claim 11, wherein the Raman scattering intensity resulting from a crystal component of the silicon-based thin film

is at least three times the Raman scattering intensity resulting from an amorphous component.

16. The photovoltaic element according to claim 11, wherein the percentage of diffraction intensity for (220) with X-ray or electron beam diffraction of the silicon-based thin film is 50% or more of the total diffraction intensity.